CONTINUOUS AIR
MONITORING RESULTS
FOR STATION 51001
IN THE
CITY OF OTTAWA
1978 - 1988

MARCH 1990

Ontario

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CONTINUOUS AIR MONITORING RESULTS
FOR STATION 51001 IN
THE CITY OF OTTAWA
1978-1988

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MARCH 1990

RECYCLABLE

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SUMMARY

The information in this report is the result of 11 years of continuous air monitoring at station 51001 in the City of Ottawa. This station is located in MacDonald Gardens at the intersection of Rideau and Wurtemburg Streets.

Ontario Criteria for desirable air quality were met for sulphur dioxide, carbon monoxide, nitrogen dioxide, and soiling index. Concentrations of ozone were in excess of the 1-hour criterion for a total of 172 hours during the eleven year period. These exceedances were primarily due to a province-wide ozone alert in 1988, and similar episodes in 1978.

The Ontario Air Quality Index (AQI) system went into operation in June of 1988. This new reporting system provided daily reports to the public and media on data provided by station 51001. Previous years' data, when cast into the new format showed that the air quality was very good more than 99 percent of the time period of this report.

INTRODUCTION

The Ontario Ministry of the Environment operates station 51001 to study and report on air quality in the residential areas of Kingsview Park, Lower Town, and Sandy Hill. This station also provides data to the National Air Pollution Surveillance (NAPS) network. NAPS is operated by Environment Canada (EC) and has other stations in the Ottawa area, but the results of these stations are reported by Environment Canada.

This station is referred to as station 51001 by provincial agencies, and as station 60104 by federal agencies. A copy of the federal site documentation is included in appendix 1, with a site map and station photographs.

POLLUTANTS MONITORED

SULPHUR DIOXIDE (SO_2)

Sulphur dioxide is a colourless gas that has a pungent odour at concentrations over 0.5 parts per million (ppm). It is known to have adverse effects on human health, vegetation, and property. It is a major factor in the formation of acid precipitation. Industrial processes and electrical utilities are the main sources, but vehicles and heating are also notable in this regard.

CARBON MONOXIDE (CO)

Carbon monoxide is a colourless, odourless gas with well documented health effects. It can be produced by almost any flame or combustion device. Automobiles account for 80% of CO production in cities, with fuel burning for other reasons causing the balance.

NITROGEN DIOXIDE (NO_2)

Nitrogen dioxide is a brown, pungent gas which is an irritant at concentrations over 0.12 ppm. It is produced by high-temperature burning processes such as automobile operation, power production, incineration, and chemical production.

SOILING INDEX

Soiling index is a measurement of the particle content of the air. Particles of a size likely to enter the lungs (< 10 microns) are produced by combustion, construction, and natural sources.

OZONE

Ozone is a colourless gas which can affect breathing, vegetation, and materials. Ozone occurs naturally and beneficially in the upper atmosphere, where it blocks certain harmful rays of the sun. In the lower atmosphere it can be produced by the reaction of hydrocarbons and nitric oxide. This reaction is induced by sunlight. The ozone can be produced at considerable distance from where the parent compounds were released. This can cause high concentrations of ozone to be found where other pollutants are low or not present. Ozone is harmful to a variety of crops and plants. People with respiratory problems experience difficulty breathing when ozone concentrations exceed 100 parts per billion (ppb).

AIR QUALITY INDEX (AQI)

The AQI is not a pollutant, but a classification and reporting scheme. Each pollutant is indexed to a scale of zero to one hundred. The scale is set such that the one-hour Ambient Air Quality Criteria (AAQC) is an AQI index of 50. The highest result in a given hour for all pollutants monitored at a site is the AQI value reported to the media and wire services. The AQI ranges are :

a) VERY GOOD	0-15
b) GOOD	16-31
c) MODERATE	32-49
d) POOR	50-99
e) VERY POOR	100 and over

The Air Resources Branch of MOE has a general information hotline 416-235-5765 which can provide more information about the AQI.

MONITORING RESULTS

SULPHUR DIOXIDE

The Ministry of the Environment (MOE) has 3 ambient air quality criteria (AAQC) for sulphur dioxide concentrations. Each of these AAQC values are for a different averaging period of exposure. Sulphur dioxide AAQC are:

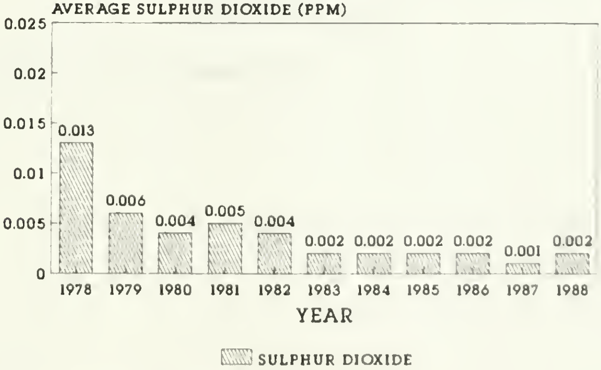
a) 0.25 parts per million (ppm) for 1 hour

b) 0.10 ppm for 24 hours

c) 0.02 ppm for 1 year

All of these AAQC were met for the period of this report. Sulphur dioxide was less than 0.05 ppm 99% of the time.

ANNUAL SULPHUR DIOXIDE AVERAGES
AT STATION 51001 - RIDEAU & WURTEMBURG

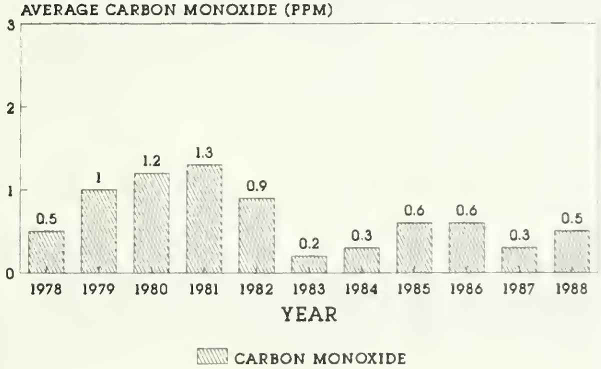


ONTARIO AAQC - 0.02 FOR 1-YEAR

CARBON MONOXIDE

The AAQC for carbon monoxide are 30 ppm for 1-hour, and 13 ppm for an 8-hour average. Carbon monoxide was less than 3 ppm 99% of the time at this location, and both AAQC were met.

ANNUAL CARBON MONOXIDE AVERAGES
AT STATION 51001 - RIDEAU & WURTEMBURG

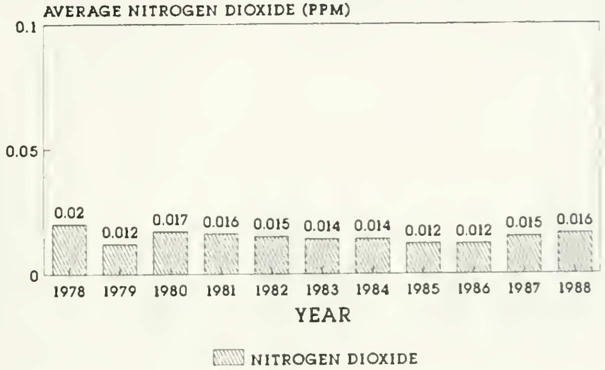


THERE IS NO YEARLY AAQC FOR CO

NITROGEN DIOXIDE

The AAQC for NO_2 are 0.20 ppm for 1-hour and 0.10 ppm for 24 hours. Both AAQC were satisfied for 1978-1988. Nitrogen dioxide concentrations were less than 0.060 ppm 99% of the time.

ANNUAL NITROGEN DIOXIDE AVERAGES
AT STATION 51001 - RIDEAU & WURTEMBURG

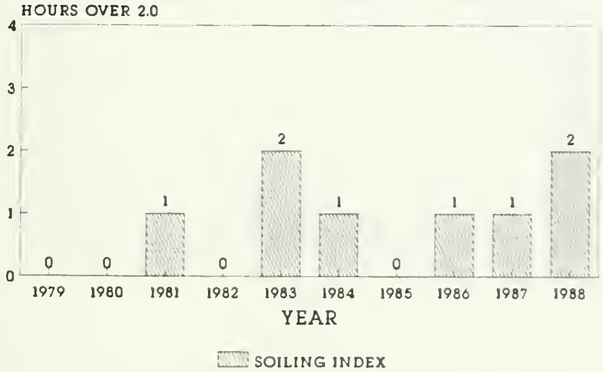


THERE IS NO YEARLY AAQC FOR NO2

SOILING INDEX

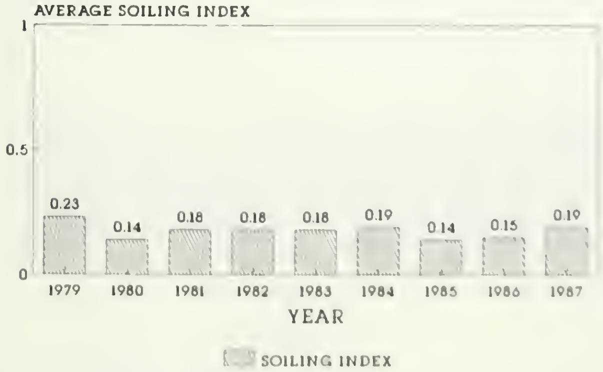
There is no AAQC for soiling index for a 1-hour averaging period. A soiling index over 2.0 is known to cause a measurable effect on visibility and human health. The yearly AAQC for soiling index is 0.50 units. There is a 24-hour AAQC of 1.0 units. Values over 2.0 were observed, but yearly and daily AAQCs were not exceeded. The results are presented below.

SOILING INDEX EXCURSIONS 1979 - 1988
AT STATION 51001 - RIDEAU & WURTEMBURG



EXCURSION IS DEFINED AS : S.I. > 2.0

ANNUAL SOILING INDEX AVERAGES
AT STATION 51001 - RIDEAU & WURTEMBURG

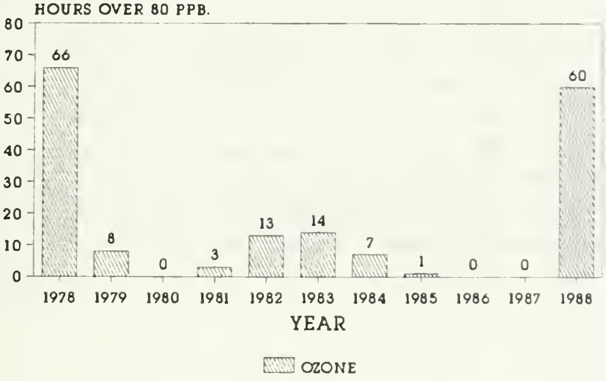


ONTARIO AAQC - 0.5 FOR 1-YEAR

OZONE

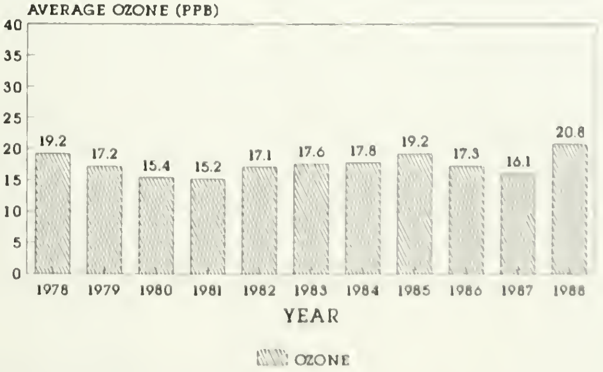
The 1-hour AAQC of 80 parts per billion (ppb) was exceeded occasionally during the monitoring period 1978-1988. The majority of the exceedances occurred in 1978 and 1988, when summer weather conditions promoted ozone buildup. The 1988 episode was part of a province-wide air quality situation. Ozone was less than 80 ppb more than 99% of the time.

OZONE EXCURSIONS 1978 - 1988
AT STATION 51001- RIDEAU & WURTEMBURG



ONE HOUR CRITERION - 80 PPB.

ANNUAL OZONE AVERAGES
AT STATION 51001 - RIDEAU & WURTEMBURG



THERE IS NO YEARLY AAQC FOR OZONE

CONCLUSIONS

With the exceptions of ozone and soiling index, all of the AAQCs set out by the Province of Ontario were achieved at station 51001 for the period of this report. There were more than 82,000 hours of monitoring, with less than 200 hours in excess of any AAQC during the report period.

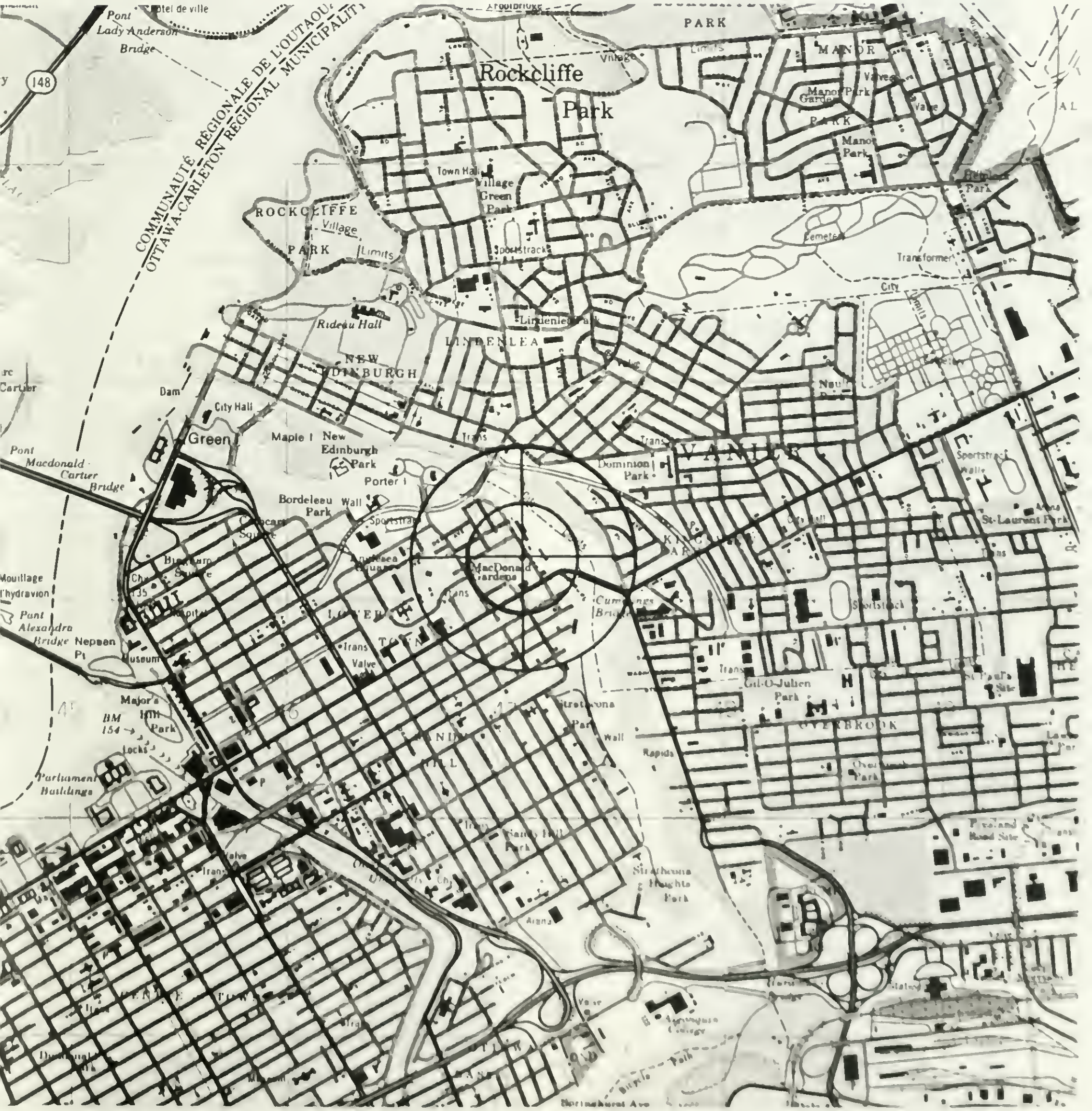
As of July 1988 station 51001 formed part of the Ontario Air Quality Index system. Levels of all of the pollutants measured are factored into a number called the Air Quality Index (AQI). The AQI is a scale of 0-100. This numerical range is summarized and termed "Very good", "Good", "Moderate", "Poor", or "Very Poor" . The value for poor AQI is 50 and is set to correspond to the 1-hour AAQC for pollutants when expressed in this format.

With this scale in mind, the air quality in the vicinity of Rideau & Wurtemburg area of the City of Ottawa was very good most of the time. Ozone was occasionally poor or very poor for a total of 172 hours. Soiling index was poor for a total of 8 hours during the eleven years. These occurrences represent less than one quarter of one percent of the total time monitored.

NAPS NO. SNPA 60104

DOCUMENTATION ON NAPS NETWORK MONITORING STATIONS
DOCUMENTATION SUR LES STATIONS RÉSEAU SNPA

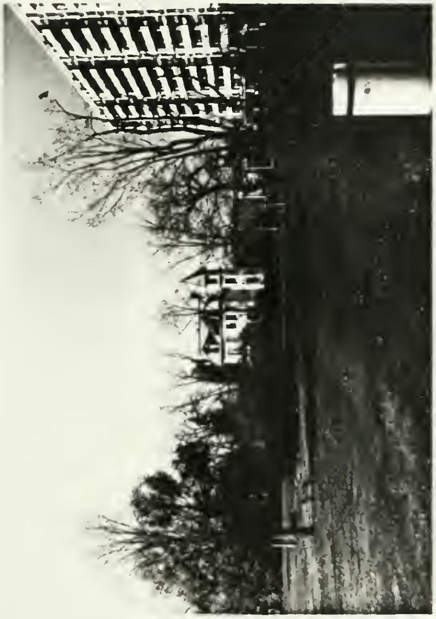
E. TOPOGRAPHIC MAP
E. CARTE TOPOGRAPHIQUE



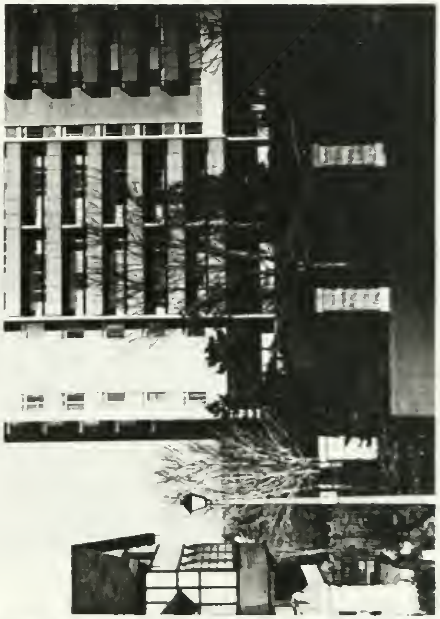
NAPS NO. SNPA 60104

DOCUMENTATION ON NAPS NETWORK MONITORING STATIONS
DOCUMENTATION SUR LES STATIONS DU RÉSEAU SNPA

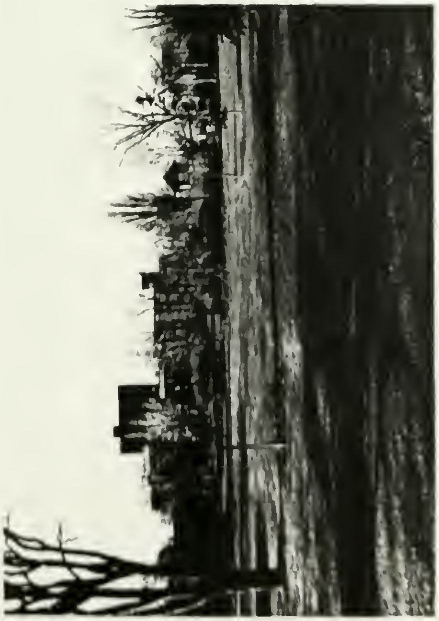
F. PHOTOGRAPHS (FROM INLET)
F. PHOTOGRAPHIES (PRISES DE L'ORIFICE D'ADMISSION)



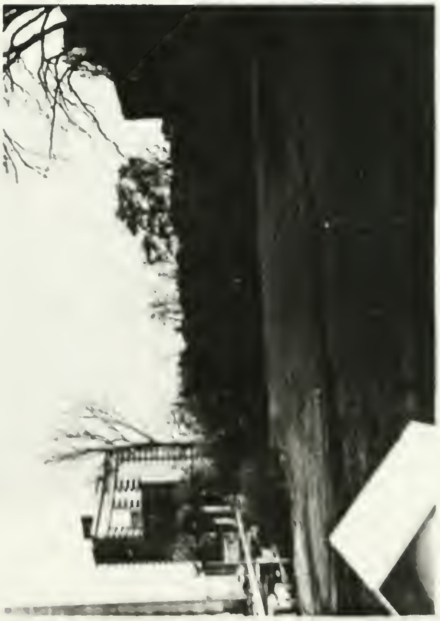
NORTH - NORD



EAST - EST



WEST - OUEST



SOUTH - SUD

DOCUMENTATION ON NAPS NETWORK MONITORING STATIONS
DOCUMENTATION SUR LES STATIONS DU RÉSEAU SNPA

G. PHOTOGRAPHS (STATION)
G. PHOTOGRAPHIES (DE LA STATION)